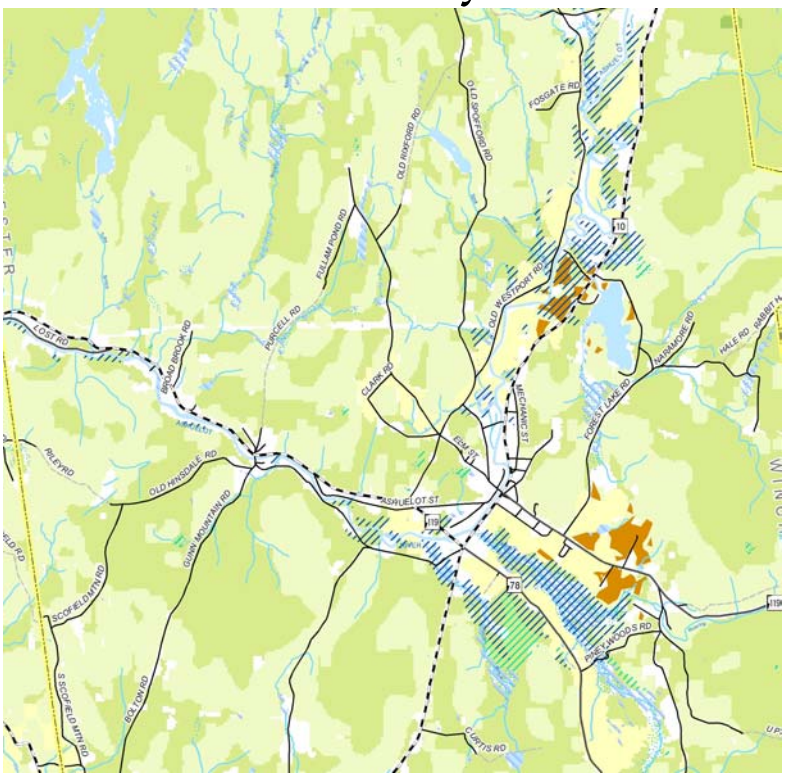
Town of Winchester, New Hampshire

Natural Resources Inventory

GIS Analysis



2007

SWRPC
Southwest Region Planning Commission
20 Central Square, 2nd Floor
Keene, New Hampshire 03431

Town of Winchester, New Hampshire
Natural Resources Inventory
GIS Analysis

Acknowledgments

This report was prepared with oversight from residents of Winchester and was funded in part under the Southwest Region Planning Commission's Regional Environmental Planning Program with support from the NH Department of Environmental Services.

Town of Winchester, New Hampshire

Natural Resources Inventory

GIS Analysis

Table of Contents

Introduction

The municipal Natural Resources Inventory (NRI) can inform local decisions regarding all aspects of community development. The use of an NRI in community planning can help a community avoid damaging impacts of human activity on natural features and natural resources. An NRI at minimum will identify resources found in the community and discuss the distribution of those resources. The NRI can also present quantitative and qualitative information about resources. All of this supports a larger purpose of creating a shared understanding among residents and officials of the community's natural landscape and an appreciation for the intrinsic and social values of the community's natural resources.

Hallmarks of sustainable community development include willingness to question convention, adapt to change, and the ability to create or capitalize on opportunities for positive change while protecting against loss.

The development, periodic refinement and inclusion of an NRI in the Master Plan can foster an ethic in municipal government of conservation, protection, stewardship of natural resources. In general, conservation goals will address two suites of issues:

- Preserve Ecological Integrity - preserve the physical and biological components (air, water, soil, organisms, and communities) and processes (e.g. hydrology, ecological succession, and biodiversity) of the natural environment in order to preserve the natural systems on which we depend for air, water, food, and fiber.
- Preserve Specific Places and Resources - rare or special plant and animal communities and species; resources of economic value (e.g. farmland soils, timber lands and water supplies); and aspects of Winchester's natural and cultural heritage, (e.g. scenic views and recreation opportunities ranging from strolling on country roads to hunting, fishing and backcountry experiences).

This project is an analysis of data describing the qualities and distribution of natural resources and features as available by way of the Southwest Region Planning Commission's (SWRPC) Geographic Information System (GIS). Primary data sources are U.S. Department of Agriculture Natural Resources Conservation Service, U.S. Geologic Survey, U.S. Fish & Wildlife Service, NH Department of Environmental Services, and New Hampshire's statewide GIS: NH GRANIT. Original data developed for this project were watershed boundaries delineated by SWRPC using USGS Topographic Maps and the location of structures digitized from Digital Orthophotos from NH GRANIT.

This GIS analysis uses two organizing geographic units: town boundaries and watersheds. Watersheds provide an ecologically meaningful unit of study and management due to the commonality of water throughout the watershed landscape. That same water provides a built-in monitoring system for environmental quality within a watershed: water quality is the product of all that water encounters in the course of the hydrologic cycle. Water chemistry and aquatic plant and animal species provide readily assessable indicators for watershed well-being.

Results are presented in maps and a series of tables, which are organized by variable groupings: Water Resources, Sensitive Resource Areas, Soil Resources, and Development Parameters, and presented by watershed.

Analysis

Tables attached after this page present summary statistics for an array of variables shown in the maps that append this report grouped as:

1. Water Resources,
2. Sensitive Resource Areas,
3. Soil Resources, and
4. Development Parameters.

Each group is further subdivided into four tables, denoted by a decimal:

#.1 - Totals (for Study Area), Ashuelot River Watershed, Connecticut River Watershed and "Leftover" Watershed.

#.2 – Totals (Study Area), Ashuelot River Watershed, and sub-watersheds within the Ashuelot River Watershed;

#.3 – Totals (Study Area), Connecticut River Watershed, and sub-watersheds within the Connecticut River Watershed; and

#.4 – Totals (Study Area), "Leftover" watershed.

Explanation of other variables in the tables:

Total Study Area - the area in acres of all land area (watersheds) determined to send water into, through and out of Winchester; this area is larger than the Town of Winchester.

Total Land Area in Study Area – the Total Study Area minus surface area of lakes and ponds.

Net Area - the area of the variable minus the "developed area / impervious surface" that overlaps the variable, for example if the USDA Soil Survey indicates a patch of farmland soil 25 acres in size, and other GIS data indicate that there are a town road and several houses with yards and driveways on that same patch that collectively occupy 6 acres, the Net Area for that farmland soil patch would be 19 acres.

Developed Area / Impervious Surface – this is the total of two other variables: 1) each building location is assumed to create a 2 acre impact in terms of displacing the natural resource values of underlying soils or natural landscape conditions that would otherwise occur in that area, and 2) the area of paved road surface known from GIS road data. Only buildings in Winchester were considered, while road data from all extents was used.

USDA Data - All data from USDA (including soils, farmland, slopes, and flooding) are available for New Hampshire towns only. As such, USDA data for portions of watersheds that fall in Massachusetts was not used.

Non-Forested, Non-Wetland Areas – these areas include fields, yards, and cleared power line areas for all watershed extents.